

STRATEGIES FOR IMPROVING PRESCRIBING PRACTICE

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Abstract • Résumé

Drug therapy is an integral component of modern medical care, and practising physicians are faced with the difficult task of keeping up with rapid changes in pharmacologic treatments. Recent evidence indicates that prescribing practice is often inconsistent with criteria for safety and effectiveness. Surveys indicate that community-based physicians are not satisfied with current sources of information on prescription drugs. The dissemination of printed material alone does not lead to improved prescribing practice, but specific education and feedback strategies can. To improve prescribing practice in Canada we need to systematically evaluate strategies to change prescribing behaviour, to design quality-assurance programs based on proven strategies and to develop collaboration and cooperation among providers, manufacturers, governments and the public.

La pharmacothérapie fait partie intégrante des soins médicaux modernes et les médecins actifs ont la tâche difficile de suivre l'évolution rapide des traitements pharmacologiques. Des données probantes récentes indiquent que, souvent, les pratiques d'ordonnance ne sont pas conformes aux critères de sécurité et d'efficacité. Les sondages révèlent que les médecins communautaires ne sont pas satisfaits des sources actuelles d'information sur les médicaments prescrits. La diffusion de documents n'entraîne pas à elle seule une amélioration des pratiques d'ordonnance, mais des stratégies précises d'éducation et de rétroaction peuvent le faire. Afin d'améliorer les pratiques d'ordonnance au Canada, nous devons évaluer systématiquement des stratégies pour modifier le comportement des médecins, concevoir des programmes d'assurance qualité fondés sur des stratégies éprouvées et instaurer la collaboration et la coopération entre les fournisseurs, les fabricants, les gouvernements et la population.

If used properly, prescription drugs can be among the most effective and cost-effective forms of treatment; used inappropriately, they not only waste limited health care resources but also may do more harm than good. Drug therapy is perhaps the most active area of change in medicine. Drug manufacturers invest huge amounts in the development of new products,¹ and patterns of use shift rapidly.²

In Canada³⁻⁵ and other countries⁶ a substantial proportion of prescribing practice is not consistent with criteria for appropriate care. This reflects a problem faced by physicians everywhere: how to keep up with the rapidly changing world of therapeutics. Pharmacology and therapeutics learned in medical school are theoretical and often rapidly outdated. Postgraduate training provides more relevant training but, unfortunately, drug choices learned during this period are often based on anecdotal information and are not always supported by research evidence. Once physicians are busily engaged in indepen-

dent practice, they must find time to absorb and integrate new information into their practice patterns. For these reasons the appropriate use of prescription drugs, perhaps more than any other aspect of medical practice, requires access to new information and continuing education.

We face the challenge of providing physicians with accurate, relevant and up-to-date information on the benefits, risks and costs of prescription drugs and of ensuring that this information is used to provide high-quality care.

The purpose of this article is to:

- review the sources currently used by Canadian community-based physicians to acquire information on prescribing and prescription drugs;
- review research on techniques that have been used to improve prescribing behaviour;
- identify key issues that need to be addressed to design and implement strategies that will improve the quality of prescribing practice in Canada.

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CURRENT SOURCES OF INFORMATION

Little research has been done on the question of where practising community-based physicians in Canada obtain their knowledge about therapeutics; what is available is difficult to interpret. Some studies we identified examined general sources of information on prescription drugs, some measured physicians' satisfaction with their knowledge of prescription drugs, others examined sources of information that drove changes in prescribing practice, and yet others examined sources of information used by physicians to answer specific questions about prescription drugs. Much of this research is dated or methodologically suspect. In this context, a systematic synthesis of current research on sources of information about prescription drugs is not feasible, and our review can only draw some tentative conclusions.

There are two broadly defined sources of information on prescription drugs. The information provided by medical schools and specialty societies through continuing medical education (CME), scientific meetings and journal articles is distinguished from that obtained from commercial sources such as sales representatives, advertisements in journals and company-sponsored symposia. Physicians have been generally consistent in ranking professional sources as more important, useful and credible than commercial sources.⁷⁻¹⁰ General practitioners⁹ and high-volume prescribers⁷ tend to rate commercial sources more highly than do other groups of physicians. Although physicians generally downplay the usefulness of commercial sources, in one national survey involving a random sample of 200 physicians, 82% of respondents indicated that information provided by drug manufacturers was always or sometimes a sufficient basis for informed decisions about the risks and benefits of drugs.⁸

The use of different sources of information does not always correlate with the perceived value of the information. In one survey CME was rated as a very important source of information by 64% of respondents; commercial seminars were given this rating by only 25%. However, these same physicians attended, on average, 1.5 CME events per year, as compared with 2.5 commercial seminars.⁷ Another survey showed that sales representatives were considered a much less credible source of information than CME, but were none the less more frequently used.⁹

As part of an Ontario Royal Commission a random sample of physicians was surveyed in 1989 about their drug knowledge.⁷ Although 63% were satisfied with their knowledge of drug effectiveness and 41% were satisfied with their knowledge of the use of specific categories of drugs, only 15% were satisfied with their knowledge of drug costs. In a national survey 62% of respondents said that they could obtain all the information

they needed about drugs, but only about one third felt that their prescribing knowledge was very up to date.⁸ When asked to identify the factors that influenced changes in prescribing practice, a nonrandom sample of Canadian specialists rated journals as the most important initial source of information, followed by CME, discussions with colleagues and contact with sales representatives. The factors that actually precipitated changes in practice were anticipated benefits in patient care, discussion with peers, product availability, CME and information given in medical journals.¹¹ A proprietary survey of practitioners obtained similar findings with regard to the initial source of information leading to prescribing changes, but the precipitating factor was not identified.¹²

The *Compendium of Pharmaceuticals and Specialties (CPS)*¹³ is a widely available source of information on prescription drugs. A survey of family physicians showed that 90% used the CPS as their first choice for information on acute drug overdoses.¹⁴ The CPS is used as a source of information not only on overdoses, but also on adverse drug reactions; it is also used as an aid in patient counselling.⁸ To respond to questions about drugs that arose in the course of day-to-day practice, staff and residents in a family practice unit first consulted the CPS and then "other family practice journals." The CPS was considered to be the most available resource and the easiest to use.¹⁵ It was also the most frequently used source of drug information among 159 Nova Scotia physicians surveyed in 1976.¹⁶ Although the CPS can provide useful information on dosages and adverse effects, its product monographs are not regularly updated, and it is not designed to provide comparative information on the clinical effects of different drugs or the relative costs of different therapies.

Although we do not have definitive information on the sources of information used by physicians to make decisions about the selection of prescription drugs, we can identify some important themes from current research. It appears that many community-based physicians are not satisfied with their current knowledge of prescription drugs and have difficulty keeping their knowledge up to date. They are faced with diverse sources of information and, although they rate commercial sources as being less useful than professional ones, they rely heavily on commercial sources and the CPS to make prescribing decisions.

TECHNIQUES FOR PROMOTING APPROPRIATE PRESCRIBING

EVALUATION OF THE LITERATURE

Little research has been done in Canada on initiatives to improve prescribing practice in primary care, but there is a substantial body of research from other countries on

the effect of education and feedback on the quality of prescribing. In 1989, Soumerai, McLaughlin and Avorn¹⁷ critically analysed the available experimental literature, reviewing 44 studies of techniques to improve prescribing in primary care, including 16 randomized controlled trials. They found that the results of inadequately controlled studies were not consistent with the results of randomized controlled trials. Given the problems with the validity of the results of nonrandomized controlled trials, we limited our review to randomized controlled trials. We located these studies using, among other sources, the Research and Development Data Base in CME, a comprehensive inventory of trials on physician behaviour change initially developed at McMaster University, Hamilton, Ont., and now maintained by the Office of Continuing Education at the University of Toronto.

The review by Soumerai and associates¹⁷ concluded that mailed educational materials alone may change knowledge but have little or no detectable effects on actual prescribing practice. Although these materials alone may not be sufficient to change prescribing behaviour, they can be an important component of other strategies such as feedback or face-to-face education. There were no studies of traditional CME techniques (e.g., large-group didactic presentations). Small-group learning showed some promise, but the most effective educational strategy was brief one-to-one education by specially trained pharmacists or physicians. Although these "academic detailing" strategies were expensive, they paid for themselves, if targeted correctly, by reducing prescribing costs. The review suggested that computerized reminders to physicians could reduce some prescribing errors; however, these systems had been tested only in academic group-practice settings rather than in private offices. The effect on practice quickly deteriorated after the reminder systems were removed, which suggests that reminders work as an administrative tool rather than by improving knowledge.

We identified nine randomized controlled trials, published after Soumerai and associates' review, that examined the impact of education or feedback on prescribing practice in primary care. Four dealt with the impact of face-to-face education provided by an academic detailer. A US study showed that visits by a clinical pharmacist to physicians reduced prescription drug costs for patients treated in a general medicine outpatient clinic, compared with costs for patients treated by a control group of physicians that did not receive any information on costs or by a group that received weekly feedback on their overall prescription drug costs and those of their peers.¹⁸ A second US trial, conducted in a Health Maintenance Organization,¹⁹ used a 10-minute, face-to-face educational meeting between prescribers and a pharmacist to achieve a more appropriate use of anti-ulcer med-

ications. Although differences between the control and intervention groups were significant after 1 month, these differences had disappeared by the second month after the intervention. A British study targeted prescribing of nonsteroidal anti-inflammatory drugs in an intervention involving visits by a specially trained pharmacist.²⁰ Each community general practitioner in the intervention group received a single visit. The intervention group showed an improvement in the appropriateness of prescribing that lasted for at least 5 months. Finally, an Australian study showed that a group of community general practitioners who received mailed educational materials, followed by a visit from a pharmacist, had better compliance rates than a control group for prescribing antibiotics in tonsillitis.²¹

In the five remaining trials feedback was provided on prescribing practice along with recommendations for changes in practice; three of these dealt with the issue of polypharmacy. Of the three, one compared a group of physicians who received feedback (involving chart review, two letters and individualized suggestions for reducing polypharmacy), a group that received a single letter identifying patients who had been given 10 or more prescriptions and recommending a reduction in the number of medications, and a control group that received no intervention. Polypharmacy was reduced in both intervention groups compared with the control group, but there was no statistically significant difference between the effects of the two interventions.²² A second trial, conducted at an internal medicine clinic, showed that individualized oral and written recommendations to house staff regarding changes in medications resulted in a reduction in polypharmacy in the intervention group compared with a control group that received no feedback.²³ The final study on polypharmacy showed that pharmacists' consultations with elderly patients and their physicians before and after discharge from hospital resulted in more appropriate use of prescription drugs than when the patients and physicians received no such consultations.²⁴

The other two trials that investigated the effect of feedback focused on drug costs in outpatient general medical clinics. In the first, interns in the intervention group received a manual of comparative drug prices annotated with prescribing advice, two feedback reports and weekly cost-oriented prescribing reminders; the control group participated in a manual-based educational program on cholesterol management.²⁵ In the second, residents in both the intervention and control groups received monthly computer printouts summarizing the total number of prescriptions that they had written and the total cost of their prescriptions. The intervention group also received a monthly letter addressing different therapeutic topics.²⁶ In the first trial the inter-

vention group prescribed less expensively than the control group;²⁵ in the second, the experimental and control groups did not have significantly different outpatient pharmacy charges.²⁶

FINDINGS FROM THE LITERATURE REVIEW

The existing research indicates that the dissemination of printed material alone does not lead to improvements in practice, but specific educational and feedback strategies can improve the quality of care. Successful educational strategies involve face-to-face contact between an expert and the physician. Feedback that involves not simply a description of current practice but, rather, includes specific recommendations for change in the use of medications can also improve practice. Although both face-to-face education and feedback with recommendations are costly to provide, preliminary analysis suggests that both strategies can be very cost-effective and may reduce costs while improving the quality of care. In a broader context, research on provider behaviour has suggested that interventions that combine education and feedback are more successful than interventions that rely on a single strategy.²⁷

LIMITATIONS OF CURRENT STUDIES

Aside from trials using academic detailing, nearly all published studies have been conducted in academic family practice units, large group practices or outpatient clinics. These may not be generalizable to community settings in Canada, which are dominated by solo and small-group practice. A second limitation is a lack of data on patient outcomes resulting from the interventions. Soumerai and associates¹⁷ identified only three trials in which the effect on patients was measured, and our subsequent search did not find any additional outcome studies. Finally, few studies have examined a comprehensive approach to improving prescribing practice. Most have examined only limited components of prescribing, such as prescription costs,^{18,25,26} polypharmacy,^{22,23} the use of specific drugs such as antibiotics,²¹ nonsteroidal anti-inflammatory drugs²⁰ and anti-ulcer agents,¹⁹ or the treatment of specific problems such as hypertension or urinary-tract infections.¹⁷ Only Lipton and collaborators²⁴ looked at a broader range of quality-of-care issues, including inappropriate choice of therapy, underdosage and overdosage, scheduling, drug-drug interactions, therapeutic duplication, allergies and the omission of necessary drug therapies.

OTHER POTENTIAL TECHNIQUES

We have limited our review to published trials that

examined the effects of various interventions on prescribing practice. Other strategies for improving prescribing practice have been suggested but not adequately tested. For example, there is evidence that expressing the results of drug trials in terms of relative rather than absolute risk reduction,²⁸ or expressing outcomes as averaged rather than stratified gains in life expectancy,²⁹ can change attitudes toward the use of drugs. Similarly, informing physicians about patients' drug-plan coverage and the costs of various therapies can alter hypothetical drug choices.³⁰ However, only prescribing intentions, which may be different from actual behaviour, have been measured to date.^{31,32} Other strategies include the use of practice formularies,³³ pharmacy-enforced treatment protocols³⁴ and peer review.³⁵⁻³⁷ Because patient expectations may influence prescribing,³⁸ providing patients with more complete information on the risks and benefits of drugs is another educational approach that requires further research.

The use of online computerized systems to provide community-based physicians with rapid information and feedback could potentially improve office-based prescribing practice. However, we could not identify any published studies that systematically evaluated this strategy; to be feasible, such an approach will have to await the more widespread use of online computerized systems in physicians' offices.

CONCLUSION

The appropriate use of prescription drugs by community-based physicians is a key element of high-quality primary care. We need to develop new ways to successfully provide up-to-date, accurate and relevant information to physicians on the everchanging and increasingly complex world of therapeutics. Three key issues need to be addressed.

First, we need to undertake more research on strategies to improve office-based prescribing practice. This research should recognize the important practical and financial issues related to developing a comprehensive intervention. Second, we need to establish a mechanism that will draw on both existing and future research to design the complex and multifaceted interventions most likely to improve the quality and cost-effectiveness of care. Third, we need to promote the collaboration of governments, providers, manufacturers and the public that is necessary to ensure that Canadians receive the best care possible.

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